

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of

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)

Connect America Fund

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WC Docket No. 10-90

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**COMMENTS OF  
THE USTELECOM ASSOCIATION**

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## Summary

The Bureau should expeditiously finalize the requirements for broadband speed and latency measurement reporting and compliance under the CAF program, particularly in light of the ongoing deployment of CAF-funded networks by ETCs. The absence of these requirements has resulted in carriers having to make design decisions based on their business as usual procedures. Absent timely guidance, auction participants will be unable to meaningfully analyze the opportunity or determine the amount of support to bid without clear knowledge of how the required speeds will be defined and measured. The broadband measurement rules should be in place before CAF II auction participants submit short forms so that parties can make informed decisions about whether to participate, and so that bidding will be based on common understandings of program requirements.

Any broadband performance measurement framework should also address the unique requirements associated with the CAF. The reasons for CAF performance measurements are fundamentally different, and those differences support a departure from the MBA program's methodology. The Bureau should therefore reject its 2014 proposal to require that speed measurements be taken during "peak periods." The Bureau must ensure that its performance measurement framework does not have the effect of undermining the Commission's prior determinations regarding reasonably comparable broadband service or changing the performance requirements that the Commission adopted in its 2011 USF Order.

There are numerous policy reasons why using "peak period" testing is not appropriate as a compliance methodology for determining whether the service meets the program's core objective – to ensure that rural customers are receiving levels of service comparable to urban customers. First, the applications or uses that the Commission and the Bureau cited to support its broadband public interest obligations are used by consumers and small business owners throughout the day, and are not limited to just a "peak period." Second, compressing testing into a single four-hour window during peak usage may directly impact consumers, since the testing itself could have on network performance and, in turn, the customer experience.

Third, the Bureau's suggestions to "tak[e] measurements throughout the entire day and then determine when the busy period actually occurred during that day" or to take measurement during the "busy season" "in areas where there is seasonal fluctuation in traffic load" are problematic and should not be adopted. Nowhere in its underlying CAF orders does the Commission make reference to such narrow distinctions associated with its measurement framework. Rather, the Commission only delineated where such testing must occur (*i.e.*, on each ETC's access network from the end-user interface to the nearest Internet access point.).

Fourth, the concerns with USTelecom's testing window proposal articulated in the Notice are misplaced. The Notice expresses concerns regarding an erroneous perception that ETCs could "include measurements from different periods so that the aggregate result reflects mostly non-peak measurements." USTelecom notes at the outset that even the Commission's MBA

program measures broadband performance over a 24-hour duration, and USTelecom's proposed measurement windows were intended to merely divide the proposed 18-hour testing period into equal time periods to ensure testing reflected use during all times of the day. Finally, comparisons to the Bureau's Phase II Price Cap Service Obligation Order are misplaced, since they were limited to Price Cap carriers, only measured a single component (*i.e.* latency), and were limited to a specific technology (*i.e.*, wireline).

The Bureau should adopt the proposed compliance and certification framework outlined in the USTelecom Proposal. The tiered compliance program outlined in the USTelecom Proposal includes key mechanisms that will enable the Commission to both monitor progress towards CAF obligations, and appropriately calibrate any potential remedial action tailored to the level of performance. Moreover, since the CAF is a technologically neutral mechanism, and support is and will be available to providers using a broad range of technologies, it is imperative that any speed and latency measurement framework is implemented through a technologically neutral mechanism that is uniform for all ETCs regardless of the platform over which they provide broadband service. Any testing platform must be proven to provide accurate results for all technologies that will be used in these CAF programs, including wireless.

The Commission should also permit flexibility in allowing the use of either software installed in CPE itself or directly attached to CPE to conduct required testing. The Commission should approve broadband testing under the CAF that ensures flexibility for ETCs in their implementation of CAF broadband measurement obligations. Determinations are best made by individual ETCs, given the broad range of factors they must assess, which can include the cost of individual solutions and their ease of implementation.

Although USTelecom originally supported USAC providing a testing function for small carriers, we now believe that is not a role that USAC should play. USTelecom maintains that USAC's role as the administrator of all high cost programs and the entity in charge of determining compliance with program rules, should disqualify it from being directly involved in the testing itself. It is inappropriate, and unnecessary, for USAC to use universal service funds to develop a service in competition with other vendors in this marketplace.

Finally, the Commission should support implementation of a testing standard that enables network throughput performance testing and statistical monitoring in a technology neutral manner, such as the TR-143 Standard. Under any software-based testing approach implemented by an ETC to satisfy the CAF measurement obligations, broadband providers require some means of base lining nominal service levels and validating quality of service (QoS) objectives. The TR-143 Standard is one way to satisfy this requirement.

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The USTelecom Association<sup>1</sup> submits these comments in response to the Public Notice (Notice) issued by the Wireline Competition Bureau (Bureau) and the Office of Engineering and Technology (OET) of the Federal Communications Commission (Commission) seeking to update the record regarding performance measures for certain Connect America Fund (CAF) high-cost universal service support recipients.<sup>2</sup> In its Notice, the Commission seeks to finalize its framework for broadband performance measurement under the CAF, and seeks comment on specific aspects of a proposal submitted in this proceeding by USTelecom (the “USTelecom Proposal”).<sup>3</sup>

**I. The Commission Should Expeditiously Finalize the Requirements for its Broadband Performance Measurement Framework Under the CAF.**

It is imperative for the Bureau to expeditiously finalize the requirements for

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<sup>1</sup> USTelecom is the premier trade association representing service providers and suppliers for the telecom industry. Its diverse member base ranges from large publicly traded communications corporations to small companies and cooperatives – all providing advanced communications service to both urban and rural markets.

<sup>2</sup> Public Notice, *Comment Sought on Performance Measures for Connect America High-Cost Universal Service Support Recipients*, DA 17-1085 (released November 6, 2017) (*Notice*).

<sup>3</sup> Letter from Kevin G. Rupy, Vice President, Law & Policy, USTelecom, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 10-90 (May 23, 2017) (*USTelecom Ex Parte*).

broadband speed and latency<sup>4</sup> measurement reporting and compliance under the CAF program,<sup>5</sup> particularly in light of the ongoing deployment of CAF-funded networks by Eligible Telecommunications Carriers (ETCs). Companies that accepted CAF support, both price cap and rate of return (ROR) carriers, are aggressively designing and deploying broadband facilities to meet their build-out obligations and milestones. In fact, the CAF II price cap carriers that accepted funding in August 2015 must complete 40 percent of their broadband network deployment by the end of this month. Ideally, carriers should have had the benefit of knowing how the broadband speed obligation was going to be measured well before meeting any deployment milestone.

Instead carriers have had to make design decisions based on their business as usual procedures.<sup>6</sup> It is essential that the Commission establish the speed performance measurement obligations prior to next year's CAF II auction. Potential auction participants will be unable to meaningfully analyze the opportunity or determine the amount of support to bid without clear knowledge of how the required speeds will be defined and measured. USTelecom thus

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<sup>4</sup> The Bureau adopted latency measurement rules in 2013. Report and Order, *Connect America Fund*, 28 FCC Rcd. 15060, DA 13-2115, ¶ 23 (WCB 2013) (*2013 CAF II State Level Commitment Order*). However, the USTelecom proposal accommodates both speed and latency measurement and reporting and thus adopting it for both measurement requirements provides a more cost-effective and efficient solution.

<sup>5</sup> USTelecom intends for this proposal to apply to CAF Phase II (CAF II) recipients (both price cap carriers accepting model-based support and CAF II auction recipients) and, with some minor modifications, to rate of return carriers that receive support pursuant to section 308(a). 47 C.F.R. § 54.308(a).

<sup>6</sup> For this reason, the Commission should consider applying its performance testing requirements to only those locations to which the CAF recipient deploys broadband after these requirements become effective.

recommends that the broadband measurement rules be in place before CAF II auction participants submit short forms so that all parties can make informed decisions about whether to participate and so that they will be bidding based on a common understanding of the program requirements.

## **II. Any Broadband Performance Measurement Framework Adopted by the Commission Should Address the Unique Requirements Associated with the CAF.**

In its Notice, the Bureau makes reference to the Commission's Measuring Broadband America (MBA) program as a possible approach to broadband measurement under the CAF.<sup>7</sup> There are a number of reasons why the Commission should not rely on its MBA Report methodology to develop the broadband performance measurement requirements for CAF. The Commission's MBA program is essentially a "study"<sup>8</sup> of existing commercial consumer broadband performance throughout the United States. The purpose of the MBA was to help consumers understand "what they can expect" from their broadband service providers so, among other things, the Report's focus on "peak period" measurements and the program's reliance on Whiteboxes and volunteers may be understandable in this context. However, as we detail below, the reasons for CAF performance measurements are fundamentally different and those differences support a departure from the MBA program's methodology.

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<sup>7</sup> Notice, ¶ 9.

<sup>8</sup> See, 2016 Measuring Broadband America, Fixed Broadband Report, p. 6 (stating that the Commission's MBA program is "an ongoing, rigorous, nationwide study of consumer broadband performance in the United States.") (2016 MBA Report).

**A. Limiting Broadband Performance Measurements to Peak Time Periods Is Inconsistent with Section 254(b) and Should be Rejected for a Variety of Policy Reasons.**

The Bureau should reject its 2014 proposal to require that speed measurements be taken during “peak periods.” The Bureau must ensure that its performance measurement framework does not have the effect of undermining the Commission’s prior determinations regarding reasonably comparable broadband service or changing the performance requirements that the Commission adopted in its 2011 USF-ICC Transformation Order.

In its 2011 USF-ICC Transformation Order, the Commission established the requirement for CAF recipients to offer service that is reasonably comparable to comparable services offered in urban areas. Specifically, the Commission stated that the “actual download and upload speeds, latency, and usage limits (if any) for providers’ broadband must be reasonably comparable to the typical speeds, latency, and usage limits (if any) of comparable broadband services in urban areas.”<sup>9</sup> Based on data reviewed as part of its Broadband Progress Reports, the Commission concluded that an initial minimum broadband speed benchmark of 4 Mbps downstream and 1 Mbps upstream will provide subscribers in rural and high-cost areas with service reasonably comparable to subscribers in urban areas.<sup>10</sup>

Similarly, when the Commission increased the minimum speed requirements for CAF II model-based support recipients in 2014, it relied on State Broadband Initiative (SBI) data.<sup>11</sup> In

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<sup>9</sup> Report and Order and Further Notice of Proposed Rulemaking, *Connect America Fund*, 77 FR 26987, 26 FCC Rcd 17663, at 17696, FCC 11-161, ¶ 91 (released November 18, 2011) (*USF/ICC Transformation Order*).

<sup>10</sup> *USF/ICC Transformation Order*, ¶ 94.

<sup>11</sup> Report and Order, *Connect America Fund*, 29 FCC Rcd 15644, FCC 14-190, ¶ 16 (released



that December 2014 order, the Commission found that 99% of Americans in urban areas have access to broadband at speeds of at least 10 Mbps downstream and 1 Mbps upstream, and a majority of Americans have already chosen to adopt such service.<sup>12</sup>

It is important to note that the data the Commission relied on to make its reasonably comparable broadband speed determinations was collected from broadband providers by various state organizations funded by NTIA. When it issued grants to collect broadband data, NTIA did not provide strict guidelines which meant that “grantees took multiple approaches to both gather and validate the information contained in the dataset.”<sup>13</sup> States and/or their contractors were instructed to collect data on “advertised” or “expected actual” speeds but no standardized methodology was specified or followed.<sup>14</sup> Given the program’s loose requirements, it is virtually certain that the speed data reported in the SBI is *not* based on what broadband speeds customers received only during the hours of 7 pm to 11 pm daily local time.

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December 18, 2014) (*CAF II Order*).

<sup>12</sup> *Id.* (citing SBI and Form 477 data).

<sup>13</sup> See NTIA SBI FAQ, response to question “How was the data for this website collected?” (available at: <https://www.broadbandmap.gov/faq>) (visited on December 6, 2017).

<sup>14</sup> See NTIA presentation (available at: [https://www.ntia.doc.gov/legacy/broadbandgrants/090724/BroadbandMappingWorkshop\\_090724.pdf](https://www.ntia.doc.gov/legacy/broadbandgrants/090724/BroadbandMappingWorkshop_090724.pdf)) (visited on December 6, 2017). *See also*, Letter from Thomas M. Koutsy, Chief Policy Counsel, Connected Nation, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 10-90 (June 18, 2013) (describing how it collected information for its ten SBI contracts, stating that “Provider field validations are performed throughout the calendar year to meet NTIA requirements, as well as to test and confirm provider service boundaries, deployed assets, broadband speeds, and delivery platforms. ....team members use a variety of resources for validation support....various tools, visual inspections, and tests provide the basis for a validation report.”).

Consequently, imposing that testing limitation on CAF recipients is inconsistent with the Commission's previous reasonable comparability findings, which relied on data containing no such limitation. Instead, it is appropriate to measure a CAF recipient's broadband performance over multiple testing windows that span the 18 hours when customers typically use their broadband service, as USTelecom proposed in May.<sup>15</sup>

There are numerous policy reasons why using "peak period" testing is not appropriate as a compliance methodology for determining whether the service meets the program's core objective – to ensure that rural customers are receiving levels of service comparable to urban customers. First, the applications or uses that the Commission and the Bureau cited to support its broadband public interest obligations are used by consumers and small business owners throughout the day, and are not limited to just a "peak period." When the Bureau set the initial minimum usage allowance of 100 GB in 2013, it explained that it was guided by the Commission's statement that "Americans should have access to broadband that is capable of enabling the kinds of key applications that drive our efforts to achieve universal broadband, including education (*e.g.*, distance/online learning), health care (*e.g.*, remote health monitoring), and person-to-person communications (*e.g.*, VoIP or online video chat with loved ones serving overseas)."<sup>16</sup> Each of these applications are utilized by consumers *throughout* the day, and it is likely that many experience higher usage outside of peak periods. For example, by its very nature, remote health monitoring must occur on a steady basis throughout the day.

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<sup>15</sup> *USTelecom Proposal*, pp. 3 – 4.

<sup>16</sup> *2013 CAF II State Level Commitment Order*, ¶ 17 (citing USF -ICC Transformation Order, ¶ 87).

Similarly, distance learning often takes place during standard business hours, when classes are typically in session.

The Bureau also identified a range of additional applications possible with 100 GB of usage that in many instances may demonstrate higher usage patterns outside the hours of 7 pm to 11 pm local time. For example, the Bureau cited the use of 95 hours of video applications by a variety of stakeholders, including healthcare and business entities, as well as the transmission of 5,000 e-mails sent and received for both personal and professional correspondence. The fact that many of these instances cited by the Bureau regularly occur outside of 7 pm to 11 pm local time makes it imperative for the Commission to measure broadband performance beyond just those four hours. Data USTelecom submitted in May demonstrates that actual broadband traffic in rural areas for both residential and business customers begins to get “busy” at 6 am and continues to show varying but steady usage throughout the day.<sup>17</sup> Such data support the use of testing windows beyond just 7 pm to 11 pm and are consistent with the Bureau’s findings about the types of applications that should be supported through the CAF programs.

Second, compressing testing into a single four-hour window during peak usage may directly impact consumers. In addition to ensuring that the performance measurements accurately reflect the objectives of the CAF program, it is important that the Bureau recognize the impact that the testing itself could have on network performance and, in turn, the customer experience. In fact, without setting appropriate parameters, significant congestion could be

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<sup>17</sup> See, *USTelecom Proposal*, p. 4 (noting the absence of a single peak period during a testing analysis, and emphasizing the presence of multiple periods of heavier usage, especially when factoring in usage from business customers and weekend usage patterns).

caused by the performance testing itself. Speed tests utilize a significant amount of bandwidth and thus generate heavy data usage since they tend to saturate broadband links with traffic to accurately characterize maximum speed.

As noted in the USTelecom Proposal, a longer testing timeframe would mitigate concerns over consumer impact and potential degradation in speed, capacity, and/or functionality that may result from a more compressed testing timeframe like that proposed in the *2014 CAF II Performance Public Notice*.<sup>18</sup> For example, the SamKnows tests consume a total of 1.7 GBs per day at 10 Mbps per test subject. Recognizing the adverse effect of testing on consumers, SamKnows does not test or aborts a test if customer utilization exceeds 64kbps.<sup>19</sup> Extrapolating this data to the CAF auction framework shows an even greater impact. Specifically,

- At the minimum speed tier (10Mbps), Usage per test subject is 1.7GBs/day, 10 states x 50 panelists per state x 10Mbps= 5Gbps (1x 10GigE link needed for testing);
- At the baseline speed tier (25mbps) , Usage per test subject is 4.5GBs/day, 10 states x 50 panelist per state x 25Mbps= 12.5Gbps (2 x10GigE links needed for testing);
- At the above-baseline speed tier (100Mbps), Usage per test subject is 17GBs/day, 10 states x 50 panelist per state x 100Mbps=50Gbps (5 x 10GigE links needed for testing);
- At the Gigabit speed tier (1000Mbps), Usage per test subject is 200-300GBs/day, 10 states x 50 panelist per state x 1000Mbps=500Gbps (50 x 10GigE links needed for testing).

Third, the Bureau's suggestions to "tak[e] measurements throughout the entire day and then determine when the busy period actually occurred during that day" or to take

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<sup>18</sup> *USTelecom Proposal*, p. 4.

<sup>19</sup> *See, 2016 MBA Report*, Technical Appendix, p. 36.

measurement during the “busy season” “in areas where there is seasonal fluctuation in traffic load ”are problematic and should not be adopted<sup>20</sup> Such proposals are not only unnecessary, they would be burdensome and unmanageable for both ETCs and any entity administering the broadband performance measurement framework. Moreover, these proposals are inconsistent with the reasonable comparability determinations the Commission made when it established the minimum broadband speeds in 2011 and 2014. As explained above, the Commission relied on broadband provider-supplied data to reach these speed determinations that were not limited to speeds provided only during the hours of 7 pm to 11 pm local time.

Nowhere in its underlying CAF orders does the Commission make reference to such narrow distinctions associated with its measurement framework. Rather, the Commission only delineated where such testing must occur (*i.e.*, on each ETC’s access network from the end-user interface to the nearest Internet access point.). Additionally, if there is a so-called “busy season” for broadband usage, which we doubt, it would likely vary dramatically from area to area and would be extremely burdensome – if not impossible – for ETCs to identify or USAC to verify. Indeed, it is entirely feasible that within an individual state for which an ETC must conduct broadband performance measurements, it would see different “busy seasons” within discrete portions of its networks. For example, one rural region in a state that is highly agrarian may have a different busy period than a rural region that lacks agricultural businesses.

Fourth, the concerns with USTelecom’s testing window proposal articulated in the Notice are misplaced. The Notice expresses concerns regarding an erroneous perception that ETCs

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<sup>20</sup> Notice, ¶ 9, p. 5.

could “include measurements from different periods so that the aggregate result reflects mostly non-peak measurements.”<sup>21</sup> USTelecom notes at the outset that even the Commission’s MBA program measures broadband performance over a 24-hour duration.<sup>22</sup> Although the Commission examines peak hours as a part of its report, it nevertheless bases its analysis on the full 24-hour period and its reports includes many other measurements as well. In other words, the Commission’s own engineers recognize the need to test over more than a brief window to get an accurate read of network performance and to manage test loads throughout the course of any given day.<sup>23</sup> USTelecom’s proposed measurement windows were intended to merely divide the proposed 18-hour testing period into equal time periods to ensure testing reflected use during all times of the day. We recognize that this is only one way to create multiple testing windows and other methods may be equally reasonable; for example, SamKnows tests once every two hours, 24x7 when it is testing performance for web browsing.

Although the Notice expresses concerns about possible network congestion,<sup>24</sup> the Bureau must not lose sight of the fact that the focus of its CAF broadband performance framework is designed to ensure compliance with certain speed and latency obligations. Ultimately the performance measurements are intended as a proxy to ensure that the networks deployed by CAF recipients are achieving a level of performance consistent with what a typical

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<sup>21</sup> *Notice*, ¶ 9, p. 5.

<sup>22</sup> *See, 2016 MBA Report*, Technical Appendix, p. 42.

<sup>23</sup> *See, 2016 MBA Report*, Technical Appendix, p. 27 (stating that “Test nodes were continually monitored for load and congestion; this end-to-end control of both the test node and Whitebox provided a high level of integrity in testing.”)

<sup>24</sup> *Notice*, ¶ 9, p. 5.

broadband user in non-CAF areas now receives, which is a best efforts service, not a guaranteed bit rate service. The Commission's own reports issued under the MBA program show that best efforts performance by its very nature is variable at different parts of the day when using different types of services. This is the very nature of a best efforts service and, thus, any performance measurements need to reflect, not penalize, that feature of such services.

Without sufficient flexibility in the testing windows, the Notice's proposal to require that 95% or more of the observations to be at or above the specified minimum speed when measured only during peak hours could effectively transform the nature of the services deployed under this program to services with guaranteed levels of performance, fundamentally different from the comparable consumer broadband services provided to a typical broadband subscriber. The USTelecom Proposal is designed to measure CAF-funded networks during all the times that customers are using it in order to determine if a carrier is meeting its CAF obligations.

Finally, in discussing its proposal for peak period measurements, the Notice cites as precedent the Bureau's *Phase II Price Cap Service Obligation Order*.<sup>25</sup> Such comparisons by the Bureau, however, are misplaced. Unlike the issues under consideration in the Notice, the Bureau's *Phase II Price Cap Service Obligation Order* applied only to price cap carriers (*i.e.*, not all CAF recipients), addressed only a single broadband measurement component (*i.e.*, latency, and not minimum speed standards), and was limited to a specific technology (*i.e.*, wireline, and not wireless and satellite). The applicability of the latency testing decision in that order is thus

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<sup>25</sup> Report and Order, *Connect America Fund*, 28 FCC Rcd 15060, 78 Fed. Reg. 70881, DA 13-2115 (released October 31, 2013) (*Phase II Price Cap Service Obligation Order*).

too narrow for consideration in the current context.

**B. The Bureau Should Adopt the Compliance and Certification Framework Outlined in the USTelecom Proposal.**

In conjunction with utilizing multiple testing windows over 18-hours, rather than a single window measured over the peak usage period, the Bureau should adopt the proposed compliance and certification framework outlined in the USTelecom Proposal.<sup>26</sup> The USTelecom Proposal reflects the realities of broadband service which varies according to a variety of discrete issues, including customer loads, weather, and equipment issues, to name just a few. The tiered compliance program outlined in the USTelecom Proposal includes key mechanisms that will enable the Commission to both monitor progress towards CAF obligations, and appropriately calibrate any potential remedial action tailored to the level of performance.

The USTelecom Proposal ensures that the compliance framework is focused on achieving a consistent and reliable level of performance for a comparable best efforts service and does not unnecessarily penalize carriers for unavoidable service variations. That is why the proposed compliance and certification framework goes hand-in-hand with the proposal to utilize multiple testing windows spread out over an 18-hour testing period each day. Taken together, these proposals help ensure that the services funded by the CAF program deliver the performance experienced by a typical broadband user without establishing a level of performance that goes well beyond the scope of the program. It is critical that the performance requirements adopted by the Bureau reflect this balance.

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<sup>26</sup> *USTelecom Ex Parte*, Attachment A.



**C. The Commission Should Adopt a Practical, Technology Neutral Mechanism for Measuring Broadband Speed and Latency Under the CAF.**

Given that the CAF is a technologically neutral mechanism,<sup>27</sup> and support is and will be available to providers using a broad range of technologies – including wireline, cable, fixed wireless, and potentially satellite – it is imperative that any speed and latency measurement framework is implemented through a technologically neutral mechanism that is uniform for all ETCs regardless of the platform over which they provide broadband service. Any testing platform must be proven to provide accurate results for all technologies that will be used in these CAF programs, including wireless.

Adopting the same methodology is also administratively efficient for both participants and the Commission, which will be able to develop, implement, and monitor a single methodology regardless of how many programs are running concurrently. The Commission has already recognized the advantage of implementing common requirements to the largest extent possible between the various USF programs.<sup>28</sup>

Applying the same requirements across all providers promotes confidence in the program as a whole, encourages broader participation and enables more consistent and effective monitoring and enforcement. Variable requirements, on the other hand, cause confusion, potentially increase errors and misunderstandings, and ultimately create an

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<sup>27</sup> See e.g. *USF/ICC Transformation Order*, ¶1 (stating that the Commission’s framework was designed “to distribute universal service funding in the most efficient and technologically neutral manner possible.”).

<sup>28</sup> For example, after revising the CAF deployment milestones in the *CAF II Order*, the Commission has wisely used the same structure for all other CAF programs.

environment where gaming and fraud can go undetected.

The Bureau should implement a framework whereby broadband speed measurement is only conducted at locations with an active subscriber. Such an approach reflects a pragmatic reality for the broadband measurement and reporting envisioned under the CAF, since absent a broadband subscriber there would be no broadband service installed at a specific location for the CAF ETC to test.<sup>29</sup> In addition, consistent with the 2011 USF Transformation Order, such testing should only be measured on each ETC's access network from the end-user interface to the nearest Internet access point.<sup>30</sup>

The Notice also states that the USTelecom Proposal recommended that “ETCs *report and certify their results* for each state by selecting one of five levels of compliance for both download and upload speed and latency.”<sup>31</sup> USTelecom, however, proposed that ETCs should only be under an obligation to report on the results of the test, and certify as to their accuracy.<sup>32</sup> In other words, compliant ETCs should *not* be under an obligation to provide any entity with the actual data associated with the certification. Rather, only companies who are in certain compliance tiers would be required to submit some detailed testing data. Of course, all

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<sup>29</sup> A CAF recipient will report locations that are broadband-enabled where it is prepared to offer service meeting the Commission's relevant CAF requirements within ten business days. *See, e.g.,* Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking, *Connect America Fund et al.*, WC Docket No. 10-90 *et al.*, 31 FCC Rcd 3087, FCC 16-33, ¶ 210 (2016). Thus, there may not be subscribers at every location a CAF recipient reports towards its CAF location count requirement.

<sup>30</sup> *USF/ICC Transformation Order*, ¶ 111.

<sup>31</sup> *Notice*, ¶ 9 (emphasis added).

<sup>32</sup> *USTelecom Ex Parte*, p. 4.

companies submitting such certifications (whether compliant or not) would be expected to maintain all testing records so they are available for audit.

The Bureau should also incorporate components into its framework that account for significant network impacting events, due to external forces, that may negatively impact broadband performance measurements. Such instances could include serious weather events that cause network outages (*e.g.*, hurricanes or tornadoes), as well as random network-straining events such as iOS updates, or live-streaming of high-interest events (*e.g.*, the Super Bowl), as well as other events beyond the provider's control that impact the network. The Commission's MBA program accounts for such instances and, given their relevance to CAF-testing scenarios, they should also be addressed here.

While the Notice does not include any proposals, USTelecom recommends that broadband performance measurement testing be conducted over a 28 day period chosen by the service provider. Such a timeframe would be long enough in duration to account for variability in usage pattern, including network impacting events and sufficient to ensure that the data adequately captures typical broadband speeds during the testing periods.

**D. The Bureau Should Permit a Broad Range of Testing Approaches, Including Raspberry Pi, and Software in the Customer Premises Equipment.**

The Commission should permit flexibility in allowing the use of either software installed in customer premises equipment (CPE) itself or directly attached to CPE to conduct required testing.<sup>33</sup> The Commission should approve broadband testing under the CAF that ensures

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<sup>33</sup> Notice, ¶ 10.

flexibility for ETCs in their implementation of CAF broadband measurement obligations.<sup>34</sup>

Determinations are best made by individual ETCs, given the broad range of factors they must assess, which can include the cost of individual solutions and their ease of implementation.

USTelecom has also previously identified a range of proposals reflecting this principle.<sup>35</sup>

The USTelecom Proposal included discussion of a software tool installed on the residential gateway (RG) that is an integral part of receiving Internet access service (RG Software Proposal). Advantages of the RG Software Proposal include: 1) no extra hardware required for performance certification at the customer premises; 2) leverages a software tool on existing RGs; 3) no customer intervention is required; 4) can be used to measure performance on all broadband technologies; 5) can be updated remotely from cloud-based servers; and 6) different set of randomly selected customers can be used each year.

Similarly, USTelecom noted that other of its members anticipate using equipment attached to the RG with software installed on that equipment rather than directly on the RG (RG Attachment Proposal). The only functional difference is whether the software is loaded directly on the RG or on a microcomputer directly attached to the RG. USTelecom maintains that both the RG Attachment Proposal, and the RG Software Proposal meet the framework of the

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<sup>34</sup> See, Letter from Kevin G. Rupy, Vice President, USTelecom, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 10-90, pp. 1 – 2 (June 5, 2015). *See also*, Letter from Kevin G. Rupy, Vice President, USTelecom, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 10-90 (March 18, 2015) (discussing four alternative approaches developed by USTelecom for use by CAF Phase II recipients to measure broadband performance).

<sup>35</sup> *USTelecom March 2015 Ex Parte*, pp. 1 - 3.

Commission's October 2014 Public Notice.<sup>36</sup> The RG Software and RG Attachment Proposals measure performance on the network path from the customer premises to testing servers at the Internet edge. Both proposals can also be used to test all types of broadband technologies (*e.g.*, FTTN, FTTP, fixed wireless).

**E. USAC Should Not be the Administrator for Servers Associated with CAF Testing.**

The Bureau also seeks comment as to whether the Commission should implement a performance testing platform specifically for CAF-supported services and require USAC to provide the server capacity necessary to set up and maintain the necessary testing servers.<sup>37</sup> While USTelecom originally supported USAC providing a testing function for small carriers, we now believe that is not a role that USAC should play.

USTelecom maintains that USAC's role as the administrator of all high cost programs and the entity in charge of determining compliance with program rules, should disqualify it from being directly involved in the testing itself. It is inappropriate, and unnecessary, for USAC to use universal service funds to develop a service in competition with other vendors in this marketplace. All parties who have accepted CAF funding, regardless of size, were aware of the eventual need to measure network speed<sup>38</sup> and thus paying for this function themselves should

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<sup>36</sup> See, Public Notice, *Wireline Competition Bureau, Wireless Telecommunications Bureau, and the Office of Engineering and Technology Seek Comment on Proposed Methodology for Connect America High-Cost Universal Service Support Recipients to Measure and Report Speed and Latency Performance to Fixed Locations*, 29 FCC Rcd 12623, DA 14-1499 (released October 16, 2014).

<sup>37</sup> Notice, ¶ 12.

<sup>38</sup> USF-ICC Transformation Order, ¶¶ 90 – 112.

be an expected burden/obligation of taking CAF funding. Moreover, using USF funds to provide measurement services for free to some providers (and not others) or to create a “business” within USAC to provide measurement services for a fee in competition with public entities is not an appropriate use of limited USF funds.

**F. The Commission Should Support Utilization Industry Testing Standards for the RG Software Proposal, Such as the TR-143 Standard.**

When discussing the RG Software Proposal, it is important to note the suitability and availability of testing standards to implement this approach. In this regard, the Commission should support implementation of a testing standard developed by the DSL Forum in 2008 that enables network throughput performance testing and statistical monitoring in a technology neutral manner (the “TR-143 Standard”).<sup>39</sup> Under any software-based testing approach implemented by an ETC to satisfy the CAF measurement obligations, broadband providers require some means of base lining nominal service levels and validating quality of service (QoS) objectives. The TR-143 Standard is one way to satisfy this requirement.

As noted by the DSL Forum at the time of the publication of the TR-143 Standard, a key benefit of such active monitoring is that it “allows the network operator to characterize the performance of end to end paths and/or path segments depending on the scope of the probing.”<sup>40</sup> The testing scenario envisioned under the TR-143 Standard<sup>41</sup> largely mirrors the

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<sup>39</sup> See, DSL Forum website, *TR-143, Enabling Network Throughput Performance Tests and Statistical Monitoring* (issued May 2008) (available at: <https://www.broadband-forum.org/technical/download/TR-143.pdf>) (visited December 6, 2017) (*TR-143 Standard*).

<sup>40</sup> *TR-143 Standard*, p. 7.

<sup>41</sup> *TR-143 Standard*, p. 7 (discussing an example use case whereby active tests between the subscriber RG and a Network Test Server located at the Network Service Provider’s Point of

approach utilized in the Commission’s Measuring Broadband America initiative, and guidance previously provided by the Commission with respect to testing under the CAF.<sup>42</sup> The Commission should therefore authorize the use of the TR-143 Standard as a testing standard for deployment in the RG Software Solution.

### **III. Conclusion.**

The Bureau should expeditiously finalize the requirements for broadband speed and latency measurement reporting and compliance under the CAF program, particularly in light of the ongoing deployment of CAF-funded networks by ETCs. Any broadband performance measurement framework adopted by the Bureau should address the unique requirements associated with the CAF. The USTelecom Proposal meets this criteria, since it includes key mechanisms that will enable the Commission to both monitor progress towards CAF obligations, and appropriately calibrate any potential remedial action tailored to the level of performance.


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Presence (POP) are performed. This scenario “gives the Network Service Provider the ability to measure the contribution of the Network Service Provider network (i.e. the portion of the end to end path under the provider’s control) to the overall user experience (which is dictated by the composite effect of the segments their applications traverse end to end). A natural extension of this use case is to place Network Test Servers at multiple locations in the subscriber path towards the provider’s Internet Peering Point.”).

<sup>42</sup> *USF/ICC Transformation Order*, ¶¶ 109 – 112.

Respectfully submitted,

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